

STUDIES IN THE EUPATORIEAE (ASTERACEAE). CXXXI.

A NEW GENUS, GUEVARIA.

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The genus Piqueria was one of the formula genera that have been recognized in the Eupatorieae and like others it has proven to be unnatural. The genus was maintained for species having no pappus and no anther appendage though it did at one time include a few appendaged species now properly placed in Ageratum. Recent investigations have shown that two groups in Mexico placed with Piqueria had relationships to completely different groups, Erythradenia to Decachaeta, Piqueria standleyi B.L. Robinson to Koanophyllon. The South American subgenus Artemisioides DC. has proven to belong to the very different genus Ophryosporus. The remaining elements retain many features in common and might prove a natural though highly diverse group. There are also some genera that must be considered in relation to the group that have not been included in previous treatments.

The present effort involves an evaluation of the genera related to Piqueria and the description of one of these, Guevaria, as new.

As delimited in the present study the relatives of Piqueria share a number of characters including the herbaceous habit, subequal phyllaries, corollas with distinct tubes and abruptly broader limbs, lobes covered with papillae on the inner surface, cells of the anther collars densely ornamented with annular thickenings, a usually reduced anther appendage, an unenlarged glabrous style base, a papillose often slightly broadened stylar appendage, and a reduced pappus. Many members of the group also have a contorted base of the achene. As such the group is notable for containing some of the most minute members of the Asteraceae and certainly the smallest of the Eupatorieae, Piqueriopsis, Iltisia, and Ferreyrella.

A genus that seems close to the Piqueria group is Phania with a short squamose pappus and a short anther appendage. The true relationship of Phania seems clearly to Ageratum, however, and at least some features such as the reduced anther appendage seem to be parallelisms.

Another genus of questionable relationship is Ascidiogyne (Cuatrecasas, 1965) with its inflated fluid filled outer layer of the achene. The pappus is present, forming a short crown, and the inner surfaces of the corolla lobes seem nearly smooth.

Two genera that belong to the group are Iltisia and Microspermum which have well-developed anther appendages. The latter is distinctive for the greatly expanded ray-like peripheral flowers of the heads and some species have a vestigial pappus. The genera have been placed in the Helenieae, an error corrected by Rzedowski (1970). These genera seem specialized within the Piquerinae, however, and not transitional from a Helianthian ancestor as suggested by Rzedowski.

Ellenbergia (Cuatrecasas, 1964) is a monotypic genus of Peru that is very similar to species placed here under Guevaria but there is a pappus of numerous short narrow tapering setae and the anther filaments consist almost entirely of the collar. The species has also been described as Piqueria setifera Chung (1967).

The two oldest names in the Piquerinae prove to represent the two most distinctive remaining elements. Piqueria, primarily of Mexico differs from other genera by heads with 3-5 phyllaries and an equal number of flowers, papillose filaments, and sparse punctations in the achene wall. Phalacrea of northern Andes is most distinct in the many flowered heads with plain to slightly convex receptacles, the short-acute phyllaries, the almost exclusively glandular hairs on the corolla, the numerous setae on the achenes, and the often attenuate bases of the achenes with small carpopodia. These differences are sufficient to raise the question of parallelism in other characters. The phyllaries and the carpopodia seem particularly significant in Phalacrea though the carpopodial structure is approached in one species of Piqueria.

The remaining genera of the complex seem to form the only unquestionably related series. These genera include Guevaria and Ferreyrella of the Andes, Piqueriopsis of Mexico and Piqueriella even farther away in eastern Brazil.

The four genera share the blunt involucre bracts, corolla shape and most features of the achene and seem unquestionably related. The peruvian genus, Ferreyrella, consists of two very small erect species with paleaceous receptacles. Paleae are found in no other genus of the Piqueria group. The two species are notable for more variation in size of the anther appendage than is seen in any related genera. The small genus, Piqueriopsis, is a close relative native to

Michoacan in Mexico. The Mexican genus is a minute erect plant distinguished by the 8-10 ribs on the achenes and the tetramerous corollas. The anther thecae are particularly short and broad. The remaining two genera, Piqueriella and Guevaria, seem particularly closely related but differ by a number of significant characters. The former genus, consisting of a single species, has rather few-flowered heads and scarcely convex receptacles, glabrous corolla tubes, single very short appendages on each anther and an erect plant base from a short tap-root. The group of 4 species in the Andes that is placed here in the new genus, Guevaria, has larger heads with mostly conical receptacles, corolla tubes with many mostly non-glandular hairs, anther appendages totally vestigial and bases of the plants decumbent.

Guevaria R.M.King & H.Robinson, genus novum Asteracearum (Eupatorieae). Plantae decumbentes sensim erectae herbaceae vel suffrutescentes usque ad 4 dm altae paucae vel multo ramosae. Folia opposita anguste saepe breviter petiolata, laminis ovatis crenulatis vel serrulatis trinervatis supra pilosis subtus pilosis et minute puberulis saepe glandiferis. Inflorescentiae laxae subcymosae, pedicellis glandulis stipitatis obsitis. Capitula late campanulata; flores 15-40. Squamae involucri 10-20 2-3-seriatae subaequales lata apice rotundata vel subtruncata vel apiculata; receptacula conica glabra. Corollae albae breves base distincte tubulosae, tubis dense hirsutis, pilis multiseptatis plerumque non glanduliferis, limbis breviter late campanulatis, lobis 5 subaequilateraliter triangularibus intus et margine dense papillosis extus breviter piliferis vel glanduliferis, parietibus cellularum sinuosis; filamenta antherarum laevia in parte superiore vix incrassata, cellulis plerumque brevibus obscuris, parietibus valde transverse annulatis; cellulae exotheciales subquadratis, appendicibus nullis vel subnullis; styli inferne glabri non nodulosi, appendicibus late linearibus dense longe papillosis; achaenia prismatica obovata 5-costata glabra; carpodia valde asymmetrica, cellulis 2-5-seriatis plerumque elongatis; pappus nullus. Grana pollinis sphaerica ca. 18 $\mu$  diam. breviter spinosa.

Species typica: Piqueria sodiroi Hieron ex Sod.

Our studies of the genus indicate that it contains the following four species.

Guevaria alvaroi R.M.King & H.Robinson, sp. nov. Plantae decumbentes sensim erectae usque ad 65 cm altae herbaceae vel suffrutescentes paucè ramosae. Caules fulvescentes teretes striati puberuli vel hirtelli. Folia opposita, petiolis 2-10 mm longis; laminae ovatae vel deltoideae usque ad 2.7 cm longae et 2.0 cm latae base truncatae vel late cuneatae trinervatae margine multo crenato-serratae apice breviter subcutae vel anguste obtusae supra sparse puberulae et breviter pilosae subtus dense glandulo-punctatae plerumque in nervis hirtellae. Inflorescentiae subcymosae, pedicellis plerumque 2-8 mm longis dense albo-puberulis. Capitula ca. 3 mm alta; flores ca. 40; squamae involucri ca. 15 eximbricatae 2-3-seriatae subaequilongae late ellipticae 1.5-2.0 mm longae usque ad 1 mm latae apice late rotundatae breviter bicostatae extus sparse perminute puberulae vel glabrae margine distincte breviter fimbriatae; corollae ca. 1.5 mm longae, tubis valde distinctis ca. 0.3 mm longis inferne longe pilosis nonglanduliferis superne glandulis breviter stipitatis obsitis, limbis late abrupte campanulatis, lobis ca. 0.5 mm longis parum longioribus quam latioribus intus et margine dense papillosis extus paucè glandulo-punctatis superne breviter hirsutis; filamenta antherarum in parte superiore ca. 100 $\mu$  longa; thecae ca. 450 $\mu$  longae; achaenia ca. 1.25 mm longa obovata glabra; carpodia 100-200 $\mu$  longa, cellulis oblongis ca. 10 $\mu$  latis. Grana pollinis ca. 20 $\mu$  diam.

Type: ECUADOR: Asuay: along the road to Giron, ca. 11 kms NE of Giron. Elevation ca. 8,900 ft. February 3, 1974, Robert Merrill King 6673 (Holotype US).

The new species is closely related to Guevaria sodiroi but that differs by the much smaller straggling habit and the more puberulous to piliferous outer surfaces of the involucre bracts. The other ecuadorian species, G. loxensis, has the more erect habit of G. alvaroi but has generally larger more coarsely crenate leaves with more cuneate bases and more obovate involucre bracts with more truncate slightly scarious apical margins. The peruvian G. vargasii is much less closely related and can be easily distinguished by the mostly or completely alternate leaves.

The genus and species are both named for Mr. Alvaro E. Guevara of Austin, Texas, who has helped the senior author on a number of collecting trips.

Guevaria loxensis (Blake & Steyermark) R.M.King & H. Robinson, comb. nov. Piqueria loxensis Blake & Steyermark, Journ. Wash. Acad. Sci. 40:47. 1950. Ecuador.

Guevaria sodiroi (Hieron. ex Sod.) R.M.King & H.Robinson, comb. nov. Piqueria sodiroi Hieron. ex Sod., in Engl. Jahrb. 29:3. 1900. Ecuador.

Guevaria vargasii (Chung) R.M.King & H.Robinson, comb. nov. Piqueria vargasii Chung, Phytologia 14:325. 1967. Peru.

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